HFPL SERIES

H TYPE FIN PRESS LINE

USE MANUAL

FOREWORD

Thank you for your choice of our HFPL series H type fin press line, in order to you can safely use this product line, please be sure to read this manual.

The purpose of this manual is to provide technical guidance of the production line, to understand the production line installation, commissioning, operation, maintenance and simple troubleshooting.

If you have any questions or problems in this manual ,please call technical support .

If this production line is transferred, please be sure to transfer along with this manual.

The production line is in accordance with the relevant Chinese standards,if in the overseas use, please the user is responsible for compliance with their country's safety standards.

——

☆ Thank you for purchasing our punching machine.

☆ In order to use the punch you purchased properly, please read this manual carefully before using.

☆ Please to be sure put this manual handed the hands of actual users .

☆ Declaration:We reserve the authority of revision without informing.

SAFETY PRECAUTIONS

Before the installation, operation, maintenance and inspection, make sure you read the instructions for using properly. In fully understanding the principle of the machine, the security situation and all precautions, and then to use operation.

Warning
The instructions and warning signs on the warning stated, can not be all-inclusive to list all hazardous situation, only lists the safe use of the minimum warning. Please fully understand the content of the warning, strictly abide by it. For personal injuries and mechanical damage caused by failure to observe the warning content, the company shall not undertake any responsibility.

Personnel must read:

	Security	Specifications	Operation	Maintenance	Installation
Managers	◎	◎	◎	◎	◎
Maintenance charge	◎	○	◎	◎	○
Operator responsible officer	◎	◎	◎	◎	○
Operators	◎	◎	◎	○	○

◎ Indicates that you must carefully read and understand the contents；

○ Indicates that you must read and understand the content.

CONTENTS

First. Security

1.1 Safety Instructions

Warning

✧ In case of danger, company management, specific responsible for personnel, machine debugging personnel, operation personnel and the specified maintenance member must abide by the labor safety regulations.

✧ Due to not complying with the safety precautions and personal injury caused by mechanical damage, the company has not and will not undertake any responsibility.

1.1.1 Managers' safety instructions

1) To develop production lines safe operation, security maintenance aspects of educational outline;

2) Before the formal run production, selected a qualified person responsible for the operation, maintenance managers and operators;

3) Before the production line running formal production, the person in charge of the specific operations, maintenance and the operator are responsible for training,and education, making them master the operation method of safety;

4) In the course of the production line, it should be correct and reliable use of safety devices, prohibit the unauthorized alteration or demolition safety devices;

5) To operators and other worker safety protection measures are taken, from the moving parts, such as rotating parts and splash damage;

6) Make regular inspection plan about production line and the safety control to ensure the reliable implementation, ensure that all parts, auxiliary equipment and safety equipment is in good working condition, supervise and urge the operator used correctly, check found the fault and its possibility, it should make the necessary processing, prevent accidents, and save the test results and repair record.

7) Once the production line abnormal situation occurs, all staffs should immediately stop using, it is forbidden to use the production line before the problem solving, to solve the problem and then restart production;

8) According to the law of areas, fulfill the obligations.

1.1.2 Operators' safety instructions

1) Qualified and to operate the production line after training education;

2) Before starting the line, implement check, daily inspection and regular inspection of production line, soundproof room and safety device test;

3) When they find production line, soundproofed rooms and safety devices occurs an exception, you should immediately stop using the product line, and report to the manager, after the exception resolution to use production line;

4) Take good care of the production lines and safety devices key switch;

5) In order to avoid accidents, after drinking or taking drugs never operating production line;

6) It is forbidden to wear loose clothes and ornaments hanging objects, to avoid electric shock, inadvertentlyor risk of being involved in machinery, if necessary, use a helmet, safety boots, safety glasses, gloves and earplugs and other labor protection products;

7) When the hand is tide, do not operate the production line or touch any electrical components;

8) It is forbidden to double operation, easy to produce risk;

9) According to the areas of laws and regulations, and fulfill their obligations.

1.1.3 Maintenance of safety instructions

1) Qualified and after training and education to maintain production line;

2) Regular inspection line, soundproof room and safety device, when found abnormal, they should immediately stop using the production line, reporting to the management and maintenance;

3)In order to avoid accidents, after drinking or taking drugs never maintaining production line;

4)According to the areas of laws and regulations, and fulfill their obligations.

1.2 Safety Precautions

1.2.1 Installation Precautions

1) Production line installed in the plant, the plant should be able to ensure normal operation of lighting and workspace;

2) Environmental requirements: Ambient temperature production lines is -5 ° - 50 ° (with no icing), ambient humidity below 85% (non-condensing), interior non-corrosive gas, flammable gas, oil and other materials and

dust, altitude 1000m Hereinafter, vibration 5.9m / s or less, pressure ≧ 6kgf/cm2, the amount of air reaches by 0.82m3/min;;

3) Production line handling, lifting and installation, need to entrust a specialized personnel or the company maintenance services;

4) Mold installation, replacement must be carried out by qualified and trained professional executive education;

5) Electric installation and connection must be carried out by qualified and trained education professionals perform.

1.2.2 Operation Precautions

1) In order to avoid accidents, confirm no other workers around confirmation before starting the production line, may not be placed around any obstacle, workstation shall not place tools and parts such as the object.

2) To boot checks and routine inspections;

3)Confirm the photoelectric safety device in a working state, they can correctly use the production line;

4)During the operation of the slider,it is forbidden to enter the production line range of motion;

5) Remove or open the flywheel rotating components such as shield, it is forbidden to run

6)2-hands action buttons must use both hands hold the two buttons at the same time, it is forbidden to use utensils for one-handed operation;

7) Must be a single operation, it is strictly prohibited to double or more operation;

8) When using the production line, it is strictly prohibited to people standing on the rotary table or stamped on the turntable;

9) When operation, notice the aggregate needle tip has penetrated the body of danger;

10) Lift aggregate device in the elevator, do not use hand or body to touch the moving parts, there is a danger of clamp;

11) In the use of the production line, such as an exception occurs, immediately press the emergency stop button, the slider stops moving, turn off the power to report to the manager.

1.2.3 Maintenance Precautions

1) Regular inspections of production lines and safety devices;

2) When maintenance is required, should switch the main electrical control box power to [OFF] position, cut off the power supply and hang the word warning signs of【ban Operation】on power supply, turn off the air supply port leading to the production line air shutoff valve and hang the word warning signs of【ban Operation】

on shut-off valve.

3) When maintenance is required, hanging the written word [prohibited] operation warning signs in a prominent place on the production line;

4) During maintenance ,pay attention to personal safety, when operated in more than 1.5m, you must use with high operating safety ladder, as the site is strictly prohibited to use the mechanical components in the high-altitude operations, it should be wearing a seat belt, to prevent falls from a height;

5) During mold maintenance, mold must be removed from the production line after the host.

1.3 Safety devices

1.3.1 photo-electric safety device

Photoelectric safety device is a between transmitter and reflector,after light being blocked immediately send the production line issued an emergency stop signal devices. On each side of the production line is equipped with a set, which covers the production line of the host, slider and stamping dies, the installation must be done with moving parts to maintain a safe distance, it is strictly prohibited to alter any installation position.

Before production in the boot, you must check to make sure it functions properly, the sliding block stamping or sliding blocks fall down, once hides the light of photoelectric safety device, the slider immediately stop the downward movement, system protection indicator light , man-machine interface with prompts.

1.3.2 2-hand operation button

In production line profile, slider or operating platform, equipped with both hands button operation, hands button is a little bit, a single operation, consecutive three running state.

Jog is a slider at any angle with both hands while pressing the button with both hands (both hands pressed interval is 0.5s), the slider starts running, leaving both hands or one hand and stop running when the button slider, the slider can not occur alone or continuous operation.

Single refers to the slider in a certain range of top dead center (such as a slider on the dead point is not within a certain range slider does not run), both hands pressed button hands (both hands pressed interval is 0.5s) , the slider is running.After running a stroke (360 °) ,the slide stops. If both hands pressed his hands buttons, sliders started running never had before bottom dead center (ie slider operation is less than 180 °), both hands or one hand and left buttons, sliders stop running; such as both hands pressed buttons, sliders run back to top dead center (ie slider operation 360 °), the hands did not leave the buttons, sliders can not run again single or continuous operation.

Continuous refers to the slider in a certain range of top dead center (such as the slider is not within the scope of the top dead center, the slider can not run), both hands pressed button (both hands pressed interval is 0.5s), the slider starts running, until run to a normal stop (set of laminations count), back to the top dead stop or abnormal stop (press the emergency stop, protective grating, the host starvation, aggregate congestion, air pressure is too low, no material, aluminum foil taut) stopped immediately. If both hands pressed his hands buttons, sliders started running never had before bottom dead center (ie slider operation is less than 180 °), both hands or one hand and left buttons, sliders stop running;

Warning

✧ Installation has been done with the range of motion to maintain a safe range, so it is strictly prohibited without authorization, change the installation location.

✧ When operating man's part of the body into the danger zone, it may lead to life accidents.

1.3.3 Security Module (optional)

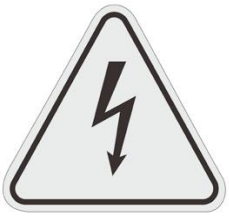
Security module is a safety device in which the slider is to ascend for mold maintenance, prevent the slider down suddenly injured

Mold in the production line maintenance, turn the slider to the highest, press [Emergency Stop] button , set the power switch to [OFF] position, observe the flywheel has stopped .pull out the security module on the main electric cabinet, inserted between the upper and the lower mold touch.

1.3.4 Soundproof room (optional)

Soundproof room is able to effectively reduce the noise generated by the production line reduce the harm of operational staff, improve the working environment, to prevent non-operating personnel working within the production line, causing an accident safety protection device.

1.4 Safety Warning Signs

Warning! 

Expressed as wrong operation may cause an electric shock.

Attention! 

Do not place your hands or other objects into the hazardous area, so as to avoid accidents.

Warning! 

Before operating the machine must be grounded, grounding method should comply with the national standards or relevant international standards. Otherwise may get an electric shock.

Warning!

Never put your hands or any part of the body into the danger zone.

Warning

✧ Warning signs on the record of an important content about avoiding personal accident,must do：

(1)Strictly abide by the content in the sign.

(2) Shall not damage, deface signs.

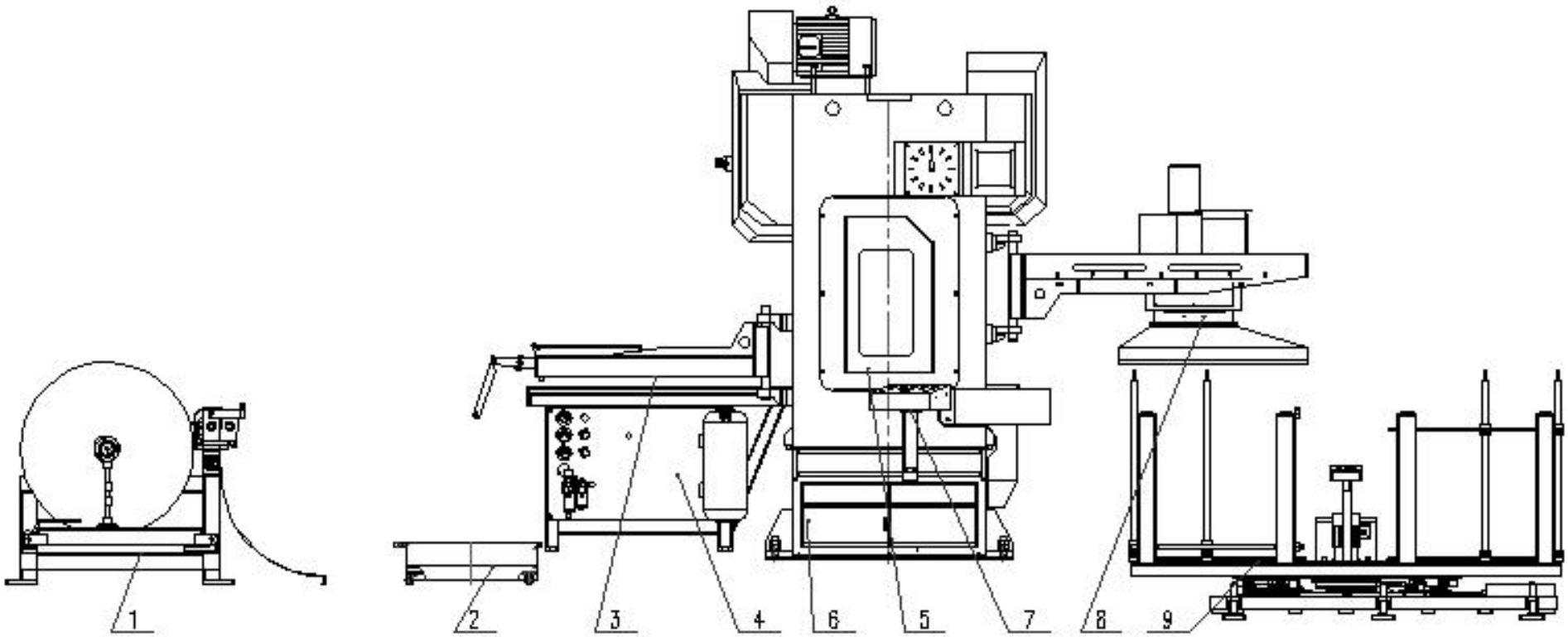
(3) Shall not be demolished.

Note: Security Warning signs have been posted at the location of the machine needed attention.

Second. Specifications

2.1 The main technical parameters

No.	Description	Parameter		
1	Capacity	500 KN	650 KN	1250KN
2	Forma	Four-column single point	Four-column single point	Biaxial four-point
3	Stroke of slide	40 mm	40 mm	40mm
4	Stroke	120~300 spm	150~300 spm	150-300 spm
5	Max die set height	240~290 mm	240~290 mm	270~320mm
6	Die height adjustment	80 mm	80 mm	120mm
7	Size of table	1300×750×115 mm	1300×900×115 mm	1355×1900×140mm
8	Bottom size of slide	800×580 mm	800×730 mm	1340×1300mm
9	Main motor power	7.5 KW	7.5 KW	15KW
10	Total motor power	18.5 KW	18.5 KW	26KW
11	Air pressure	6 kgf/cm^2	6 kgf/cm^2	6 kgf/cm^2
12	Hydraulic working pressure	8 MPa	8 MPa	8 MPa
13	Inner diameter of Aluminum rolling	Φ150 mm/Φ75 mm	Φ150 mm/Φ75 mm	Φ150 mm/Φ75 mm
14	Max. diameter of Aluminum rolling	Φ1000 mm	Φ1000 mm	Φ1200 mm
15	Max. width of Aluminum rolling	410 mm	560 mm	1100

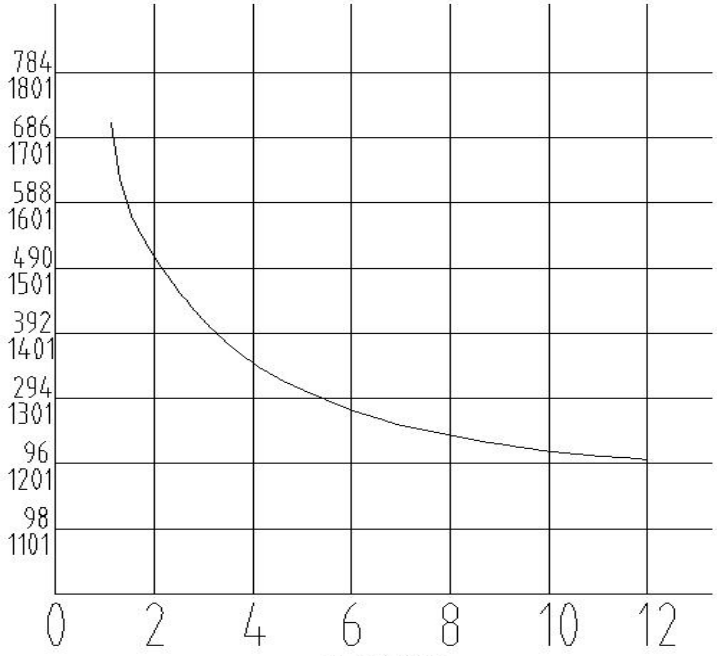


1- Feeding frame **2- Waste containers** **3- Fuel tank** **4 - for mold** **5 - mold** **6 – Host**

7 - Cantilever system **8- suction portion** **9- Rotary aggregates**

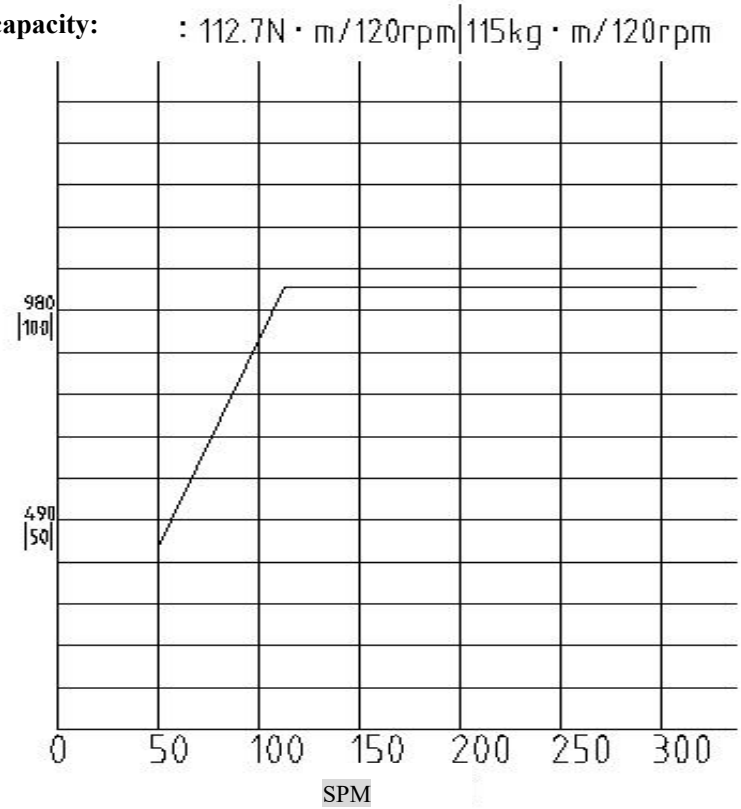
2.2 Stamping host pressure stroke curves and energy curve

2.2.1 Stamping host pressure stroke curves



2.2.2 Stamping host pressure energy curve

Normal capacity: : 112.7N · m/120rpm | 115kg · m/120rpm



2.3 Main components configuration table

No.	Content	Manufacturer	Mark
1	Frequency converter	Japan Mitsubishi	
2	PLC programmable controller	Japan Mitsubishi	
3	Interface	Japan Mitsubishi	
4	Rotary encoder	Japan Mitsubishi	
5	Main pneumatic components	Japan SMC	
6	Main hydraulic components	Japan Yu ken	
7	Main clutch brake	Made in china	
8	Main clutch brake double valve	Japan TACO	
9	Photoelectric safety device	Keli	
10	Main bearing	Sweden SKF and Humanism bearing	
11	Main motor	Siemens	
12	Centralized lubrication	Japan IHI	
13	Main electrical components	Schneider	

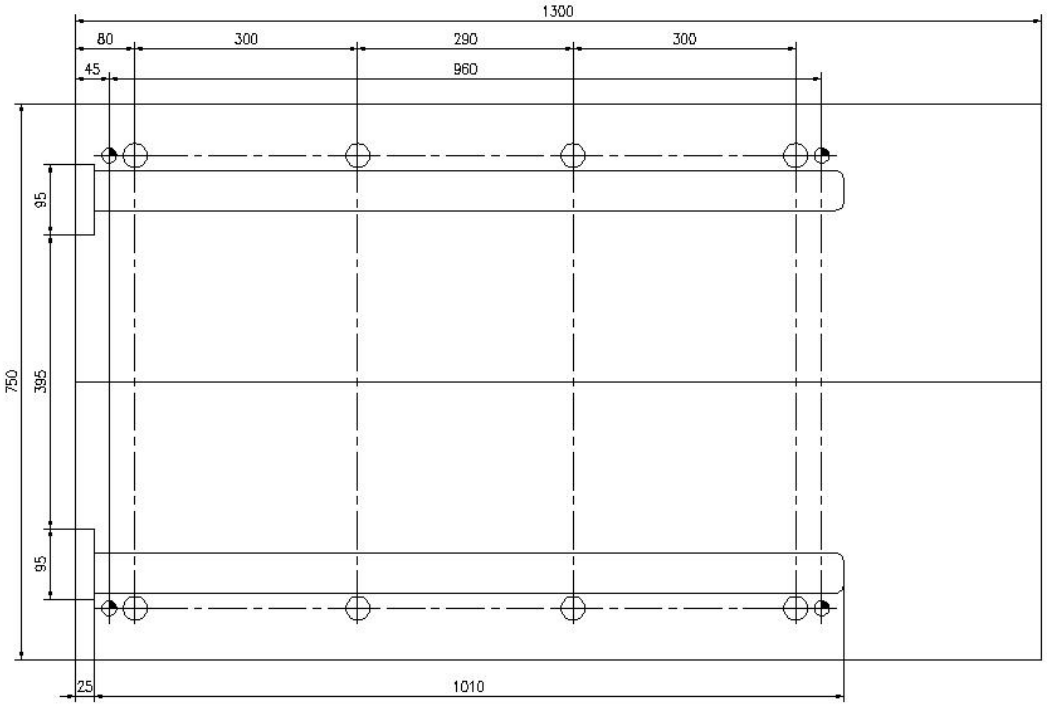
Note: ● for the customer designated brand

2.4 Production Line foundation plans figure

Production Line foundation plans figure See attached figure 2.1

2.5 Production line and mould installation size figure

2.5.1 Table installation dimension figure



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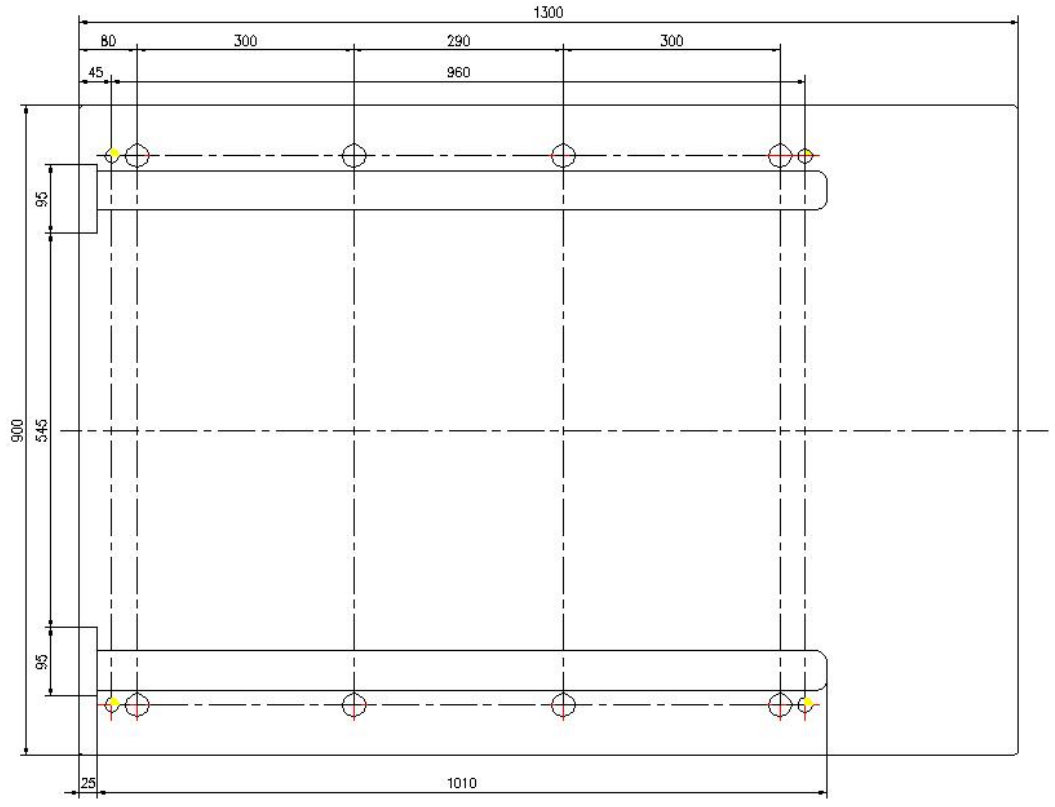

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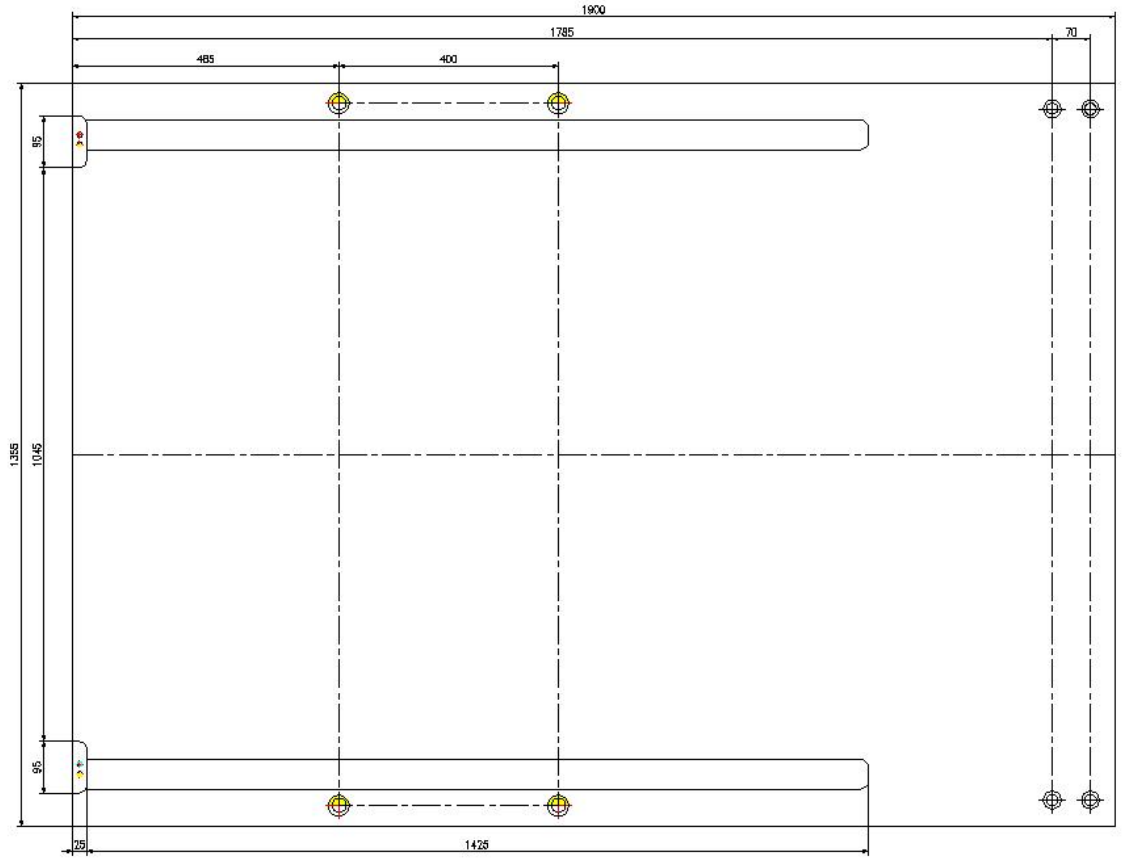

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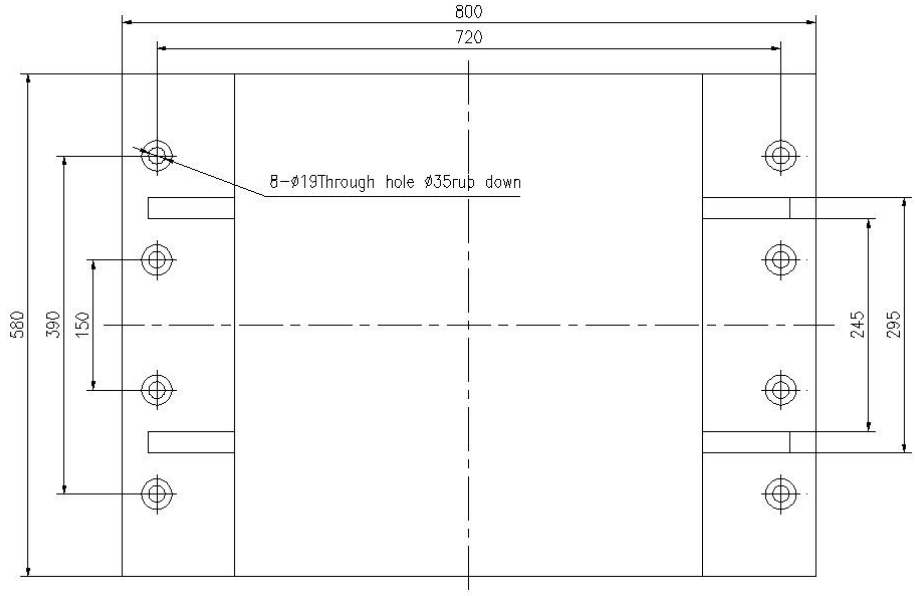
Picture 2.1

2.5.2 Slider bottom installation dimension figure



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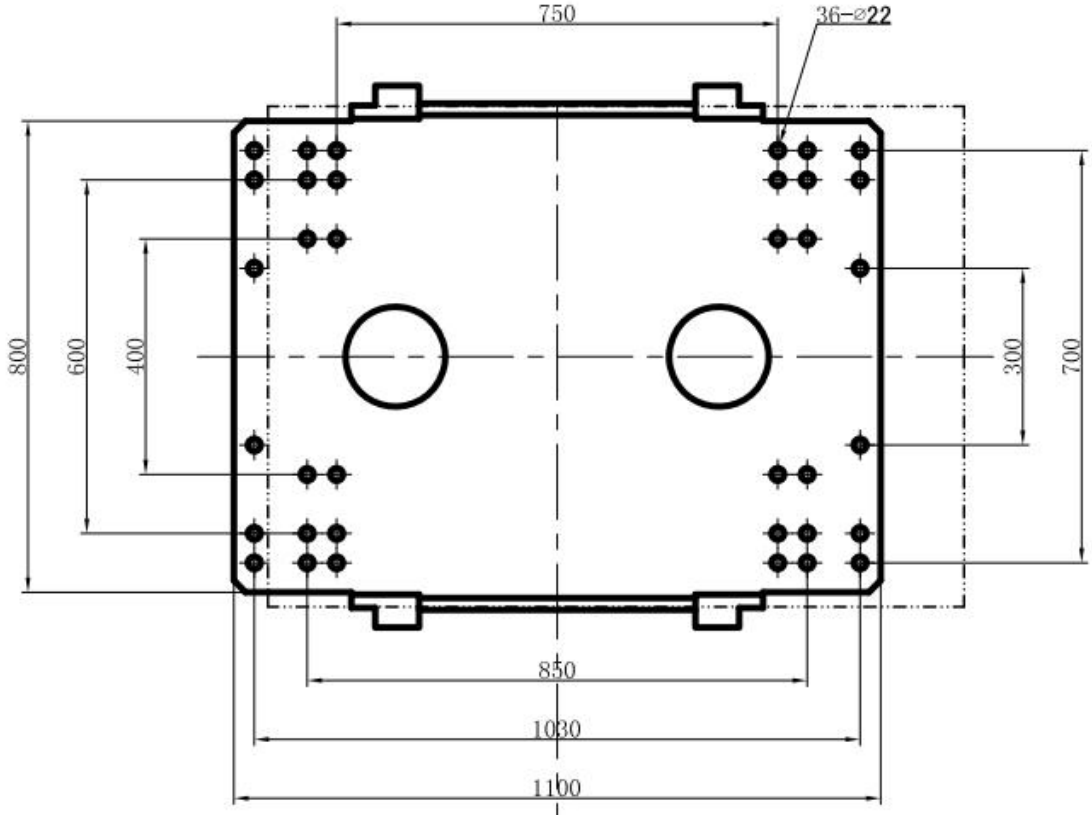

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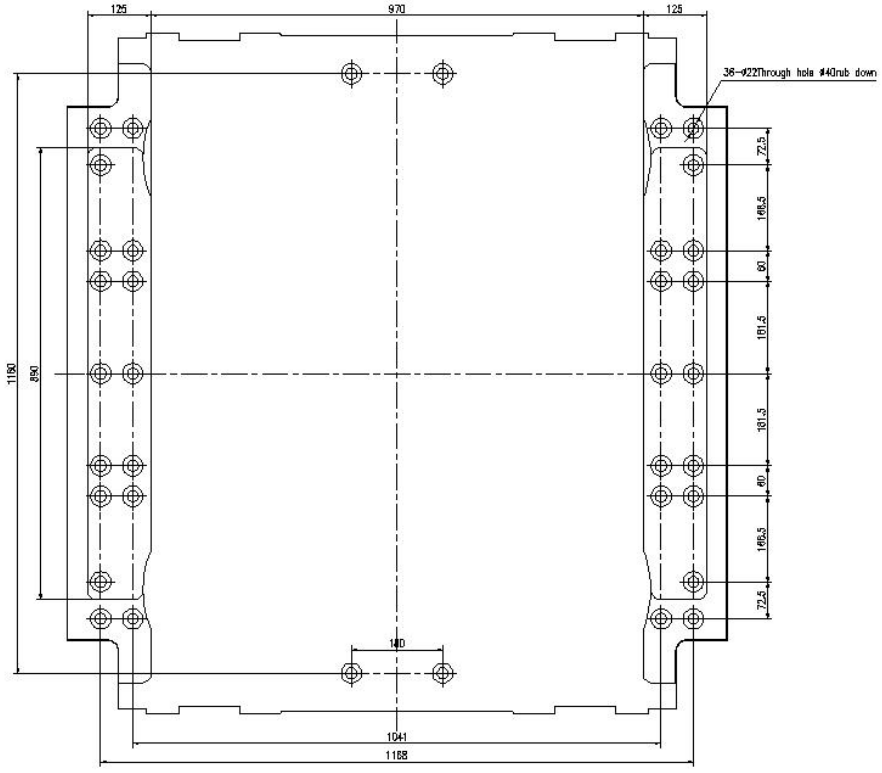


HFPL1250

Picture 2.2

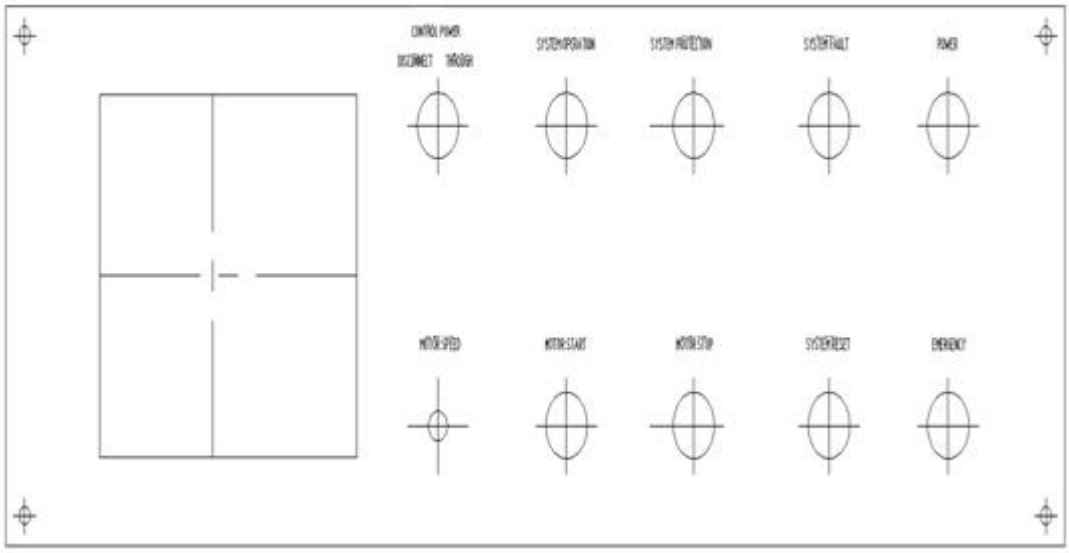
2.6 The main oil cylinder section view

The main oil cylinder section view　See attached figure 2.4

Third: Operation

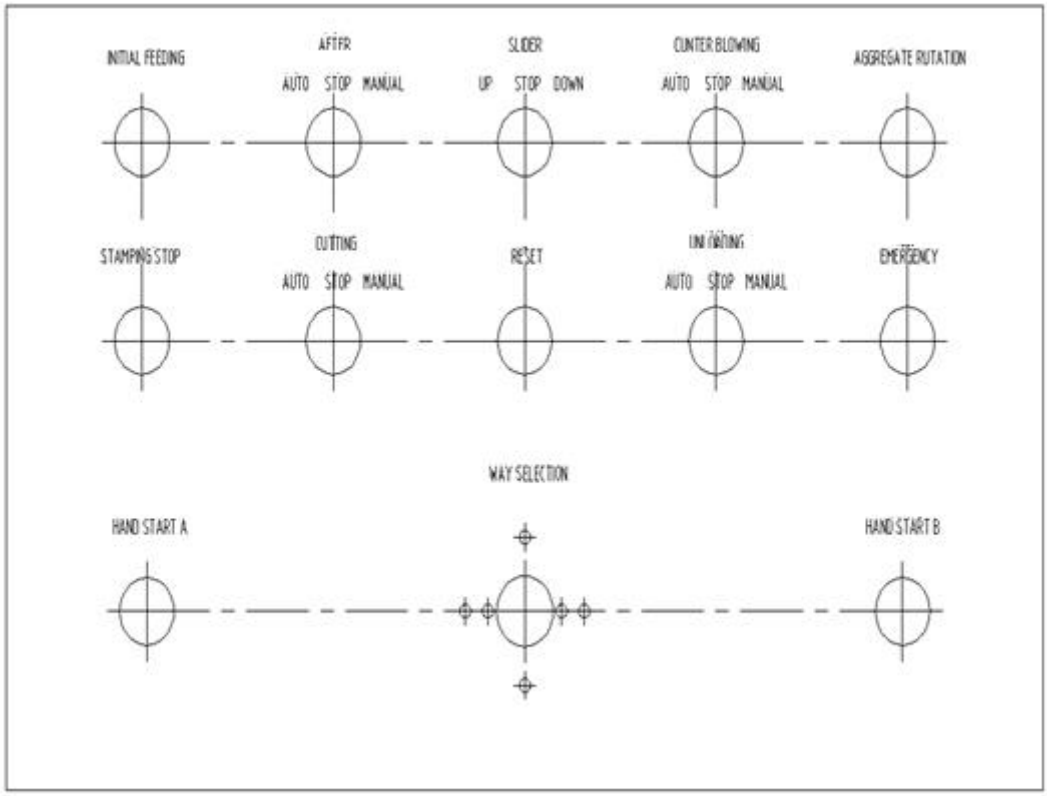
3.1 Operational approach of electrical part

3.1.1 Introductions of main electric cabinet & panel



Drawing 3.1

3.1.2 Introductions of operation panel on machine



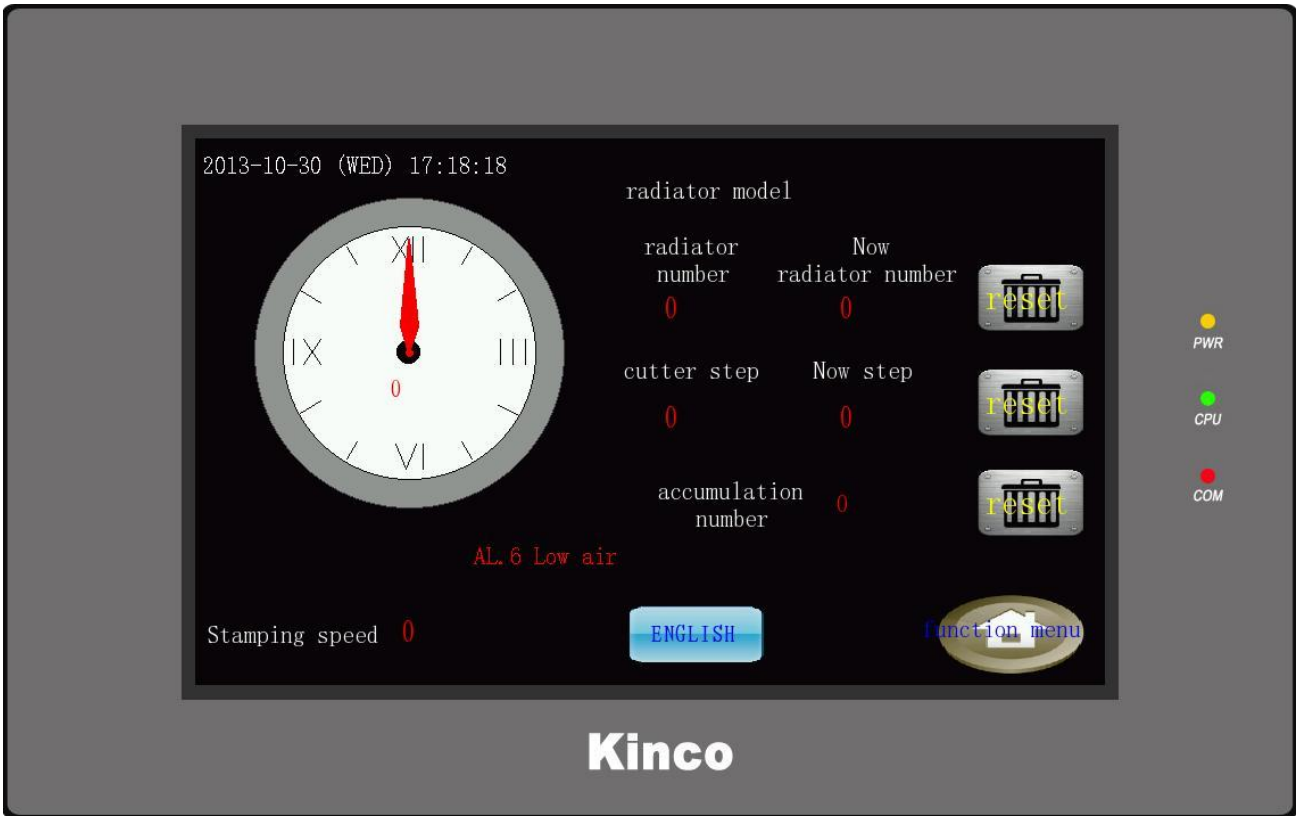
Drawing 3.2

3.1.3 Operation program & adjustment method of major parameter

1. Power on：

1) Switching general power switch QF1，power light (HL1) is on，rotate key-operated switch (SA1) to power source “ON” location, system is power on, touch screen will show below menu after several second：

2) click touch screen to turn over “FUNCTION SELECTION” as below picture：



2. Major parameter setting：

[A] stamping number setting：

Setting stamping number what need on “FINS NUMBER SETTING” on operation menu

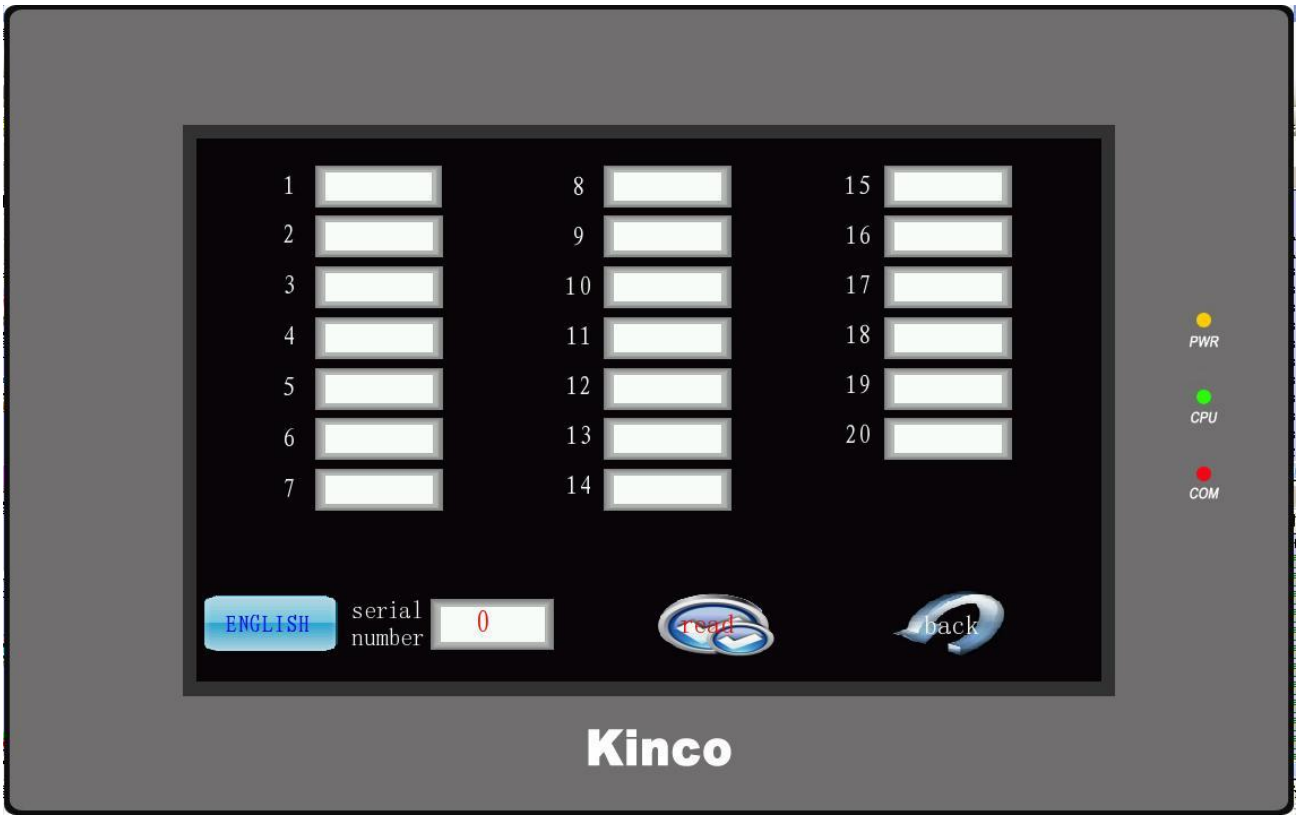
[B] stamping shape selection：

Click “FINS SHAPE SELECTION” on operation menu, enter into selection page, as below picture：

Input serial number of fins on “Fin No.”, click “CONFIRM”. And then click “HOMEPAGE” to return.

[C] stamping shape setting：

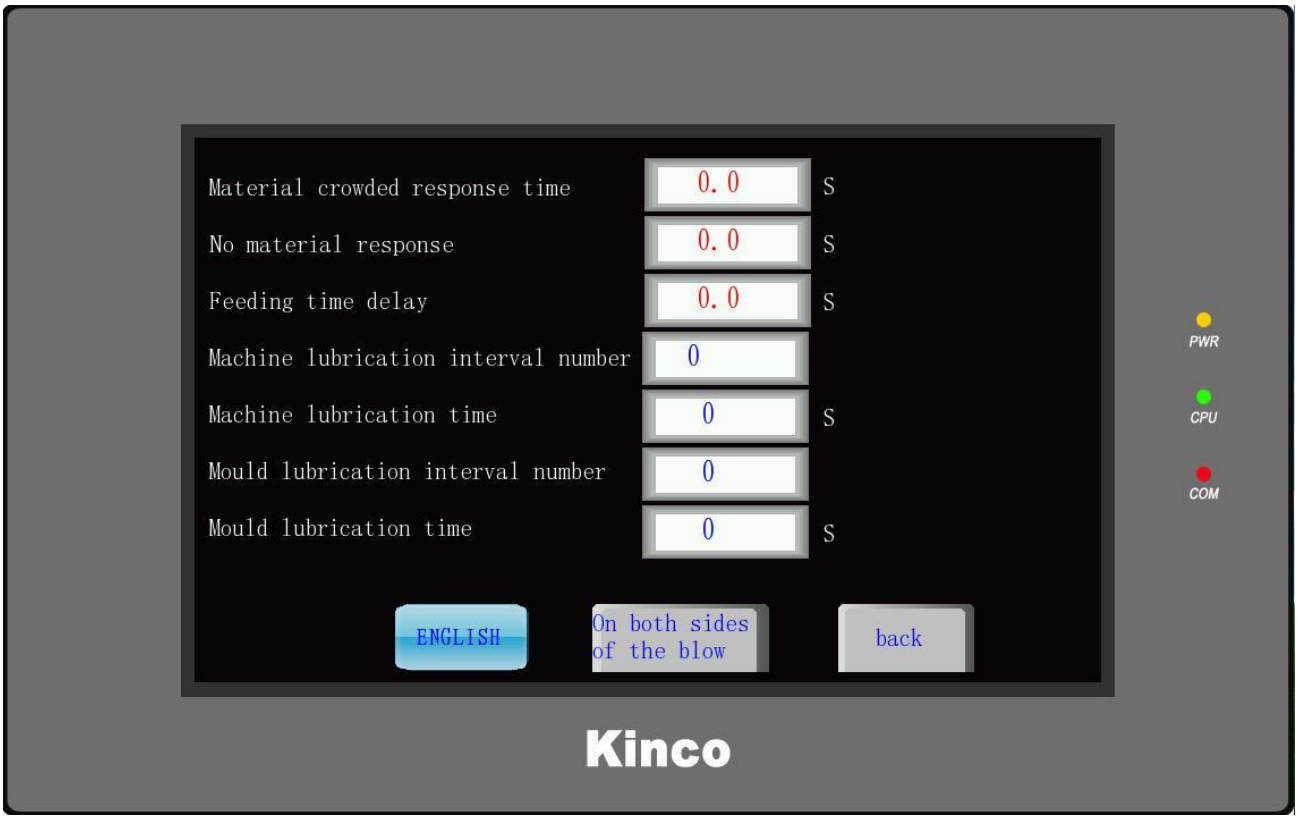
Click “FINS SHAPE SETTING” on operation menu, enter into settingpage,as below picture：



Input “No.” & “FINS SIZE”, and setting “HOLE COUNT”, “SINGLE/DOUBLE GAP”,“PRE-CUTTING”, “HETEROMORPHISM CUTTING IN MIDDLE”, “HETEROMORPHISM CUTTING AT END”status & step number according to requirement, and then click “CONFIRM”.

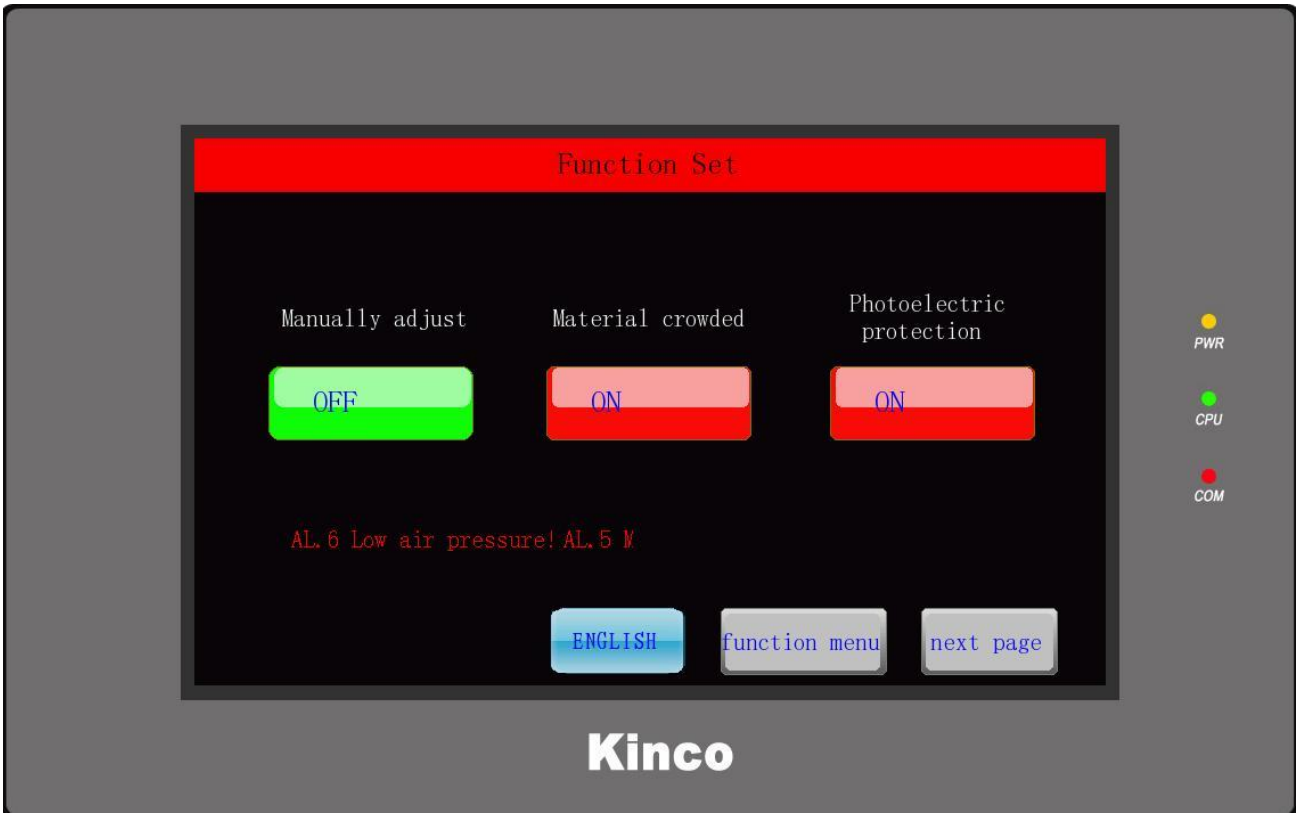
3. Stamping angle setting：

Click “CAM SETTING” on operation menu, enter into angle setting page,as below pictue：



Set the parameter you need. And press the button On both sides of the blow, enter into the next page,as below picture:

4. **Function slection：** click “FUNCTION SET” on operation menu, as below picture：

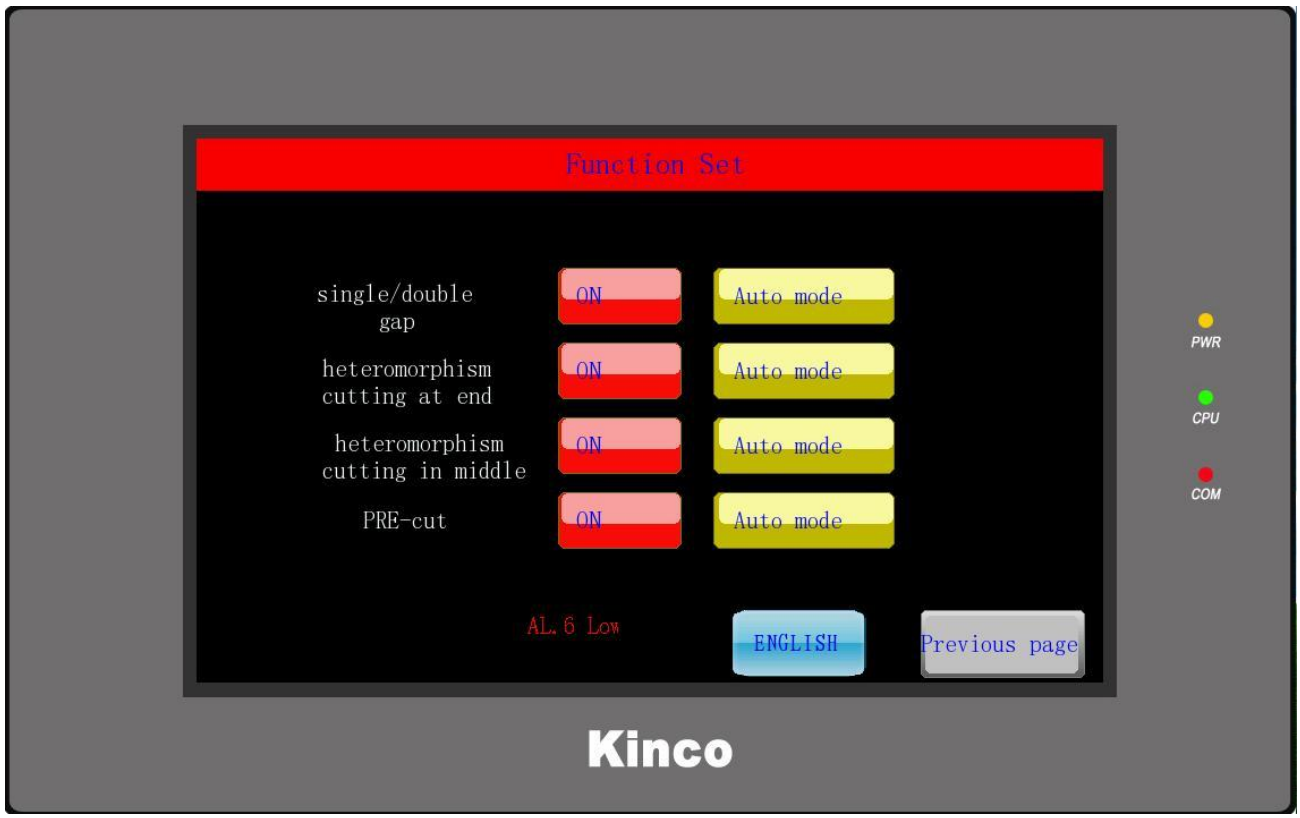


Click “COLLECTION BLOCKING” to on-off defensive function of collection, click “MANUAL ADJUSTMENT” on open mode, “SYSTEM PROTECTION” indicator light on, can adjust slide block and inception feeding now.

Click “BLOWBACK SET”, in this page, can setting gassing time and gassing interval time for 5 sets of blowback solenoid valve

Click “TIMES SETTING”on “FUNCTION SELECTION”page, can be timeset of function in this page.

Click Next page, enter into next page. As below:



5. **Auxiliary equipment control：** click “AUXILIARY EQUIPMENT CONTROL” on operation menu

[A] single/double gap control a ngle：judge if exist single/double gap according to fins shape setting, and turn on or off single/double gap air valve

[B] cutter control angle：while finish to cut one fin, turn on cutter air valve in setting angle, stretch out cutter, fin will be cut off while slide block of press reaching to under dead point

[C] throttle control angle：use to control blow back pressure. When open the throttle, the blow back pressure lower, while throttle be closed it’s vacuum, fins be blowback

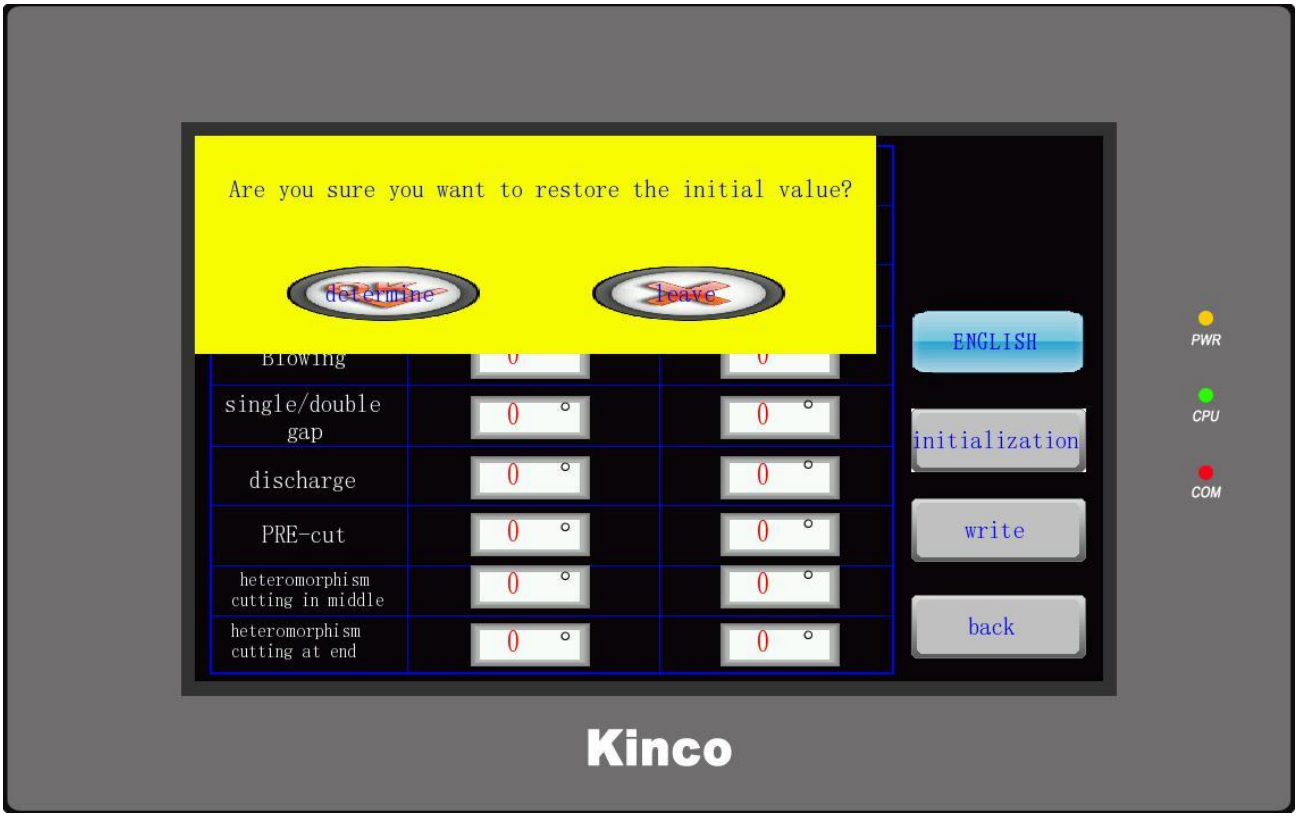
[D] unloading control angle：use to control unloading plate up-and-down motion, unloading plate come down while unloading valve be turn on, and it go up while valve be turn off.

[E] blowing waste control angle: use to blow away waste after pressing, (Notice: opening angle and closing angle cannot big difference, if big, the air pressure of system will drop, result in bad consequences such as clutch lose efficacy)

[F] stopping control angle: use to setting interdictory angle of slide block in one round or continuous. While the slide block reach to this angle, clutch off. Setting stopping control angle according to stamping speed

[G] stamping count angle: use to count number of stamping, no modification leave factory in normal, the step number will plus one while through this angle

Click initalization , you can recover the system to the original.



6. **Function slection：** click “FUNCTION SET” on operation menu, as below picture：

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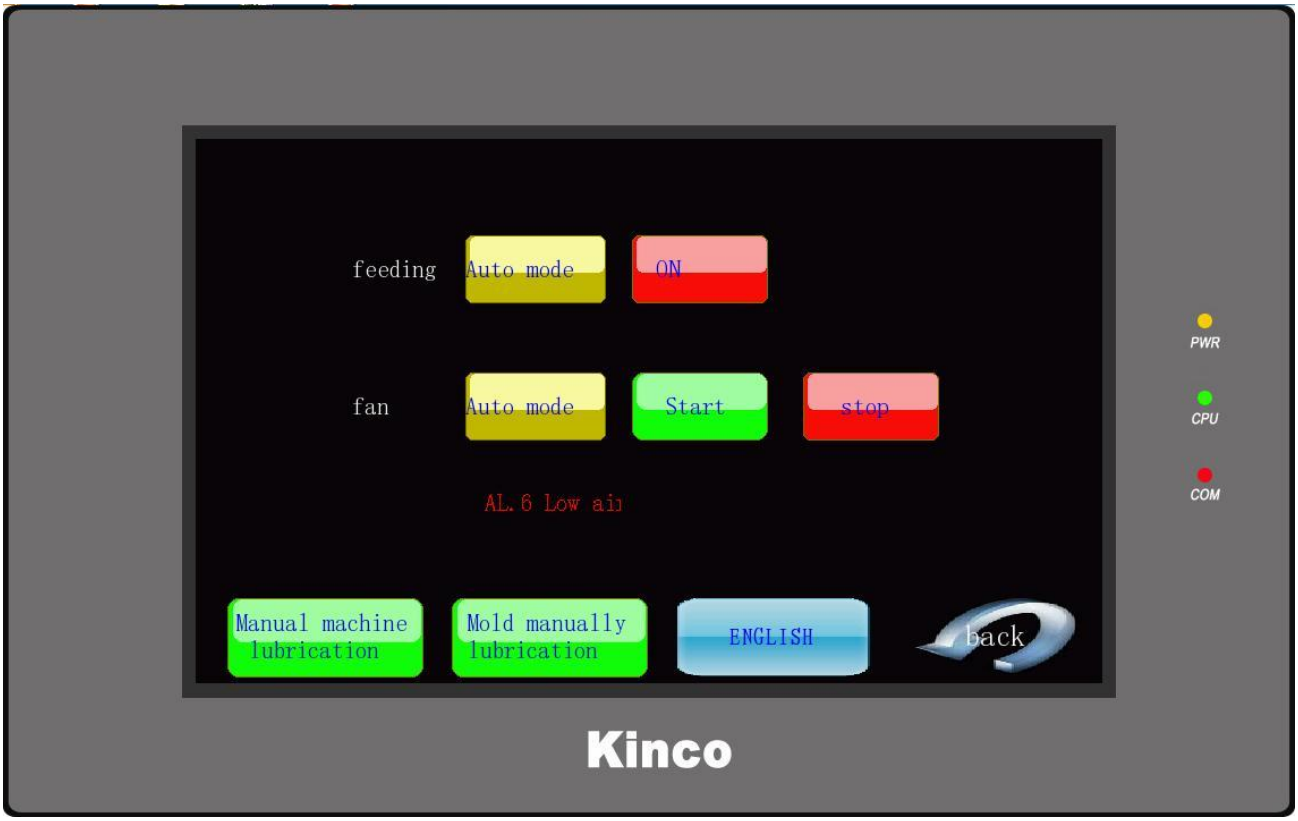
Click “TIMES SETTING”on “FUNCTION SELECTION”page, can be timeset of function in this page.

7. Auxiliary engine setment



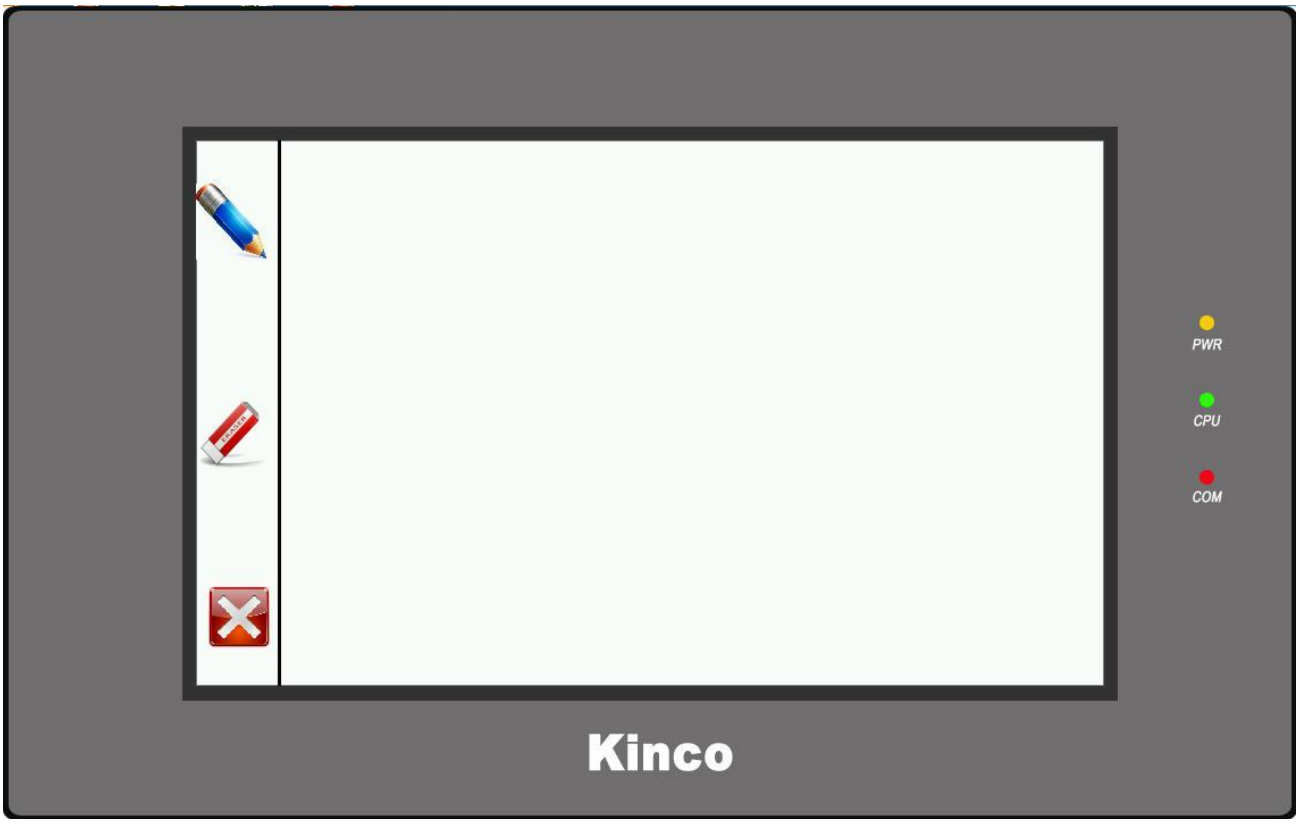
[A] motor of decolier： on automatic mode, if main motor start or feeding start, motor of decolier will turn on or off. on manual mode, motor of decolier turn on or off depend on ON or OFF status.

[B] fan of collection： click “DRAUGHT FAN CONTROL”, as below picture.

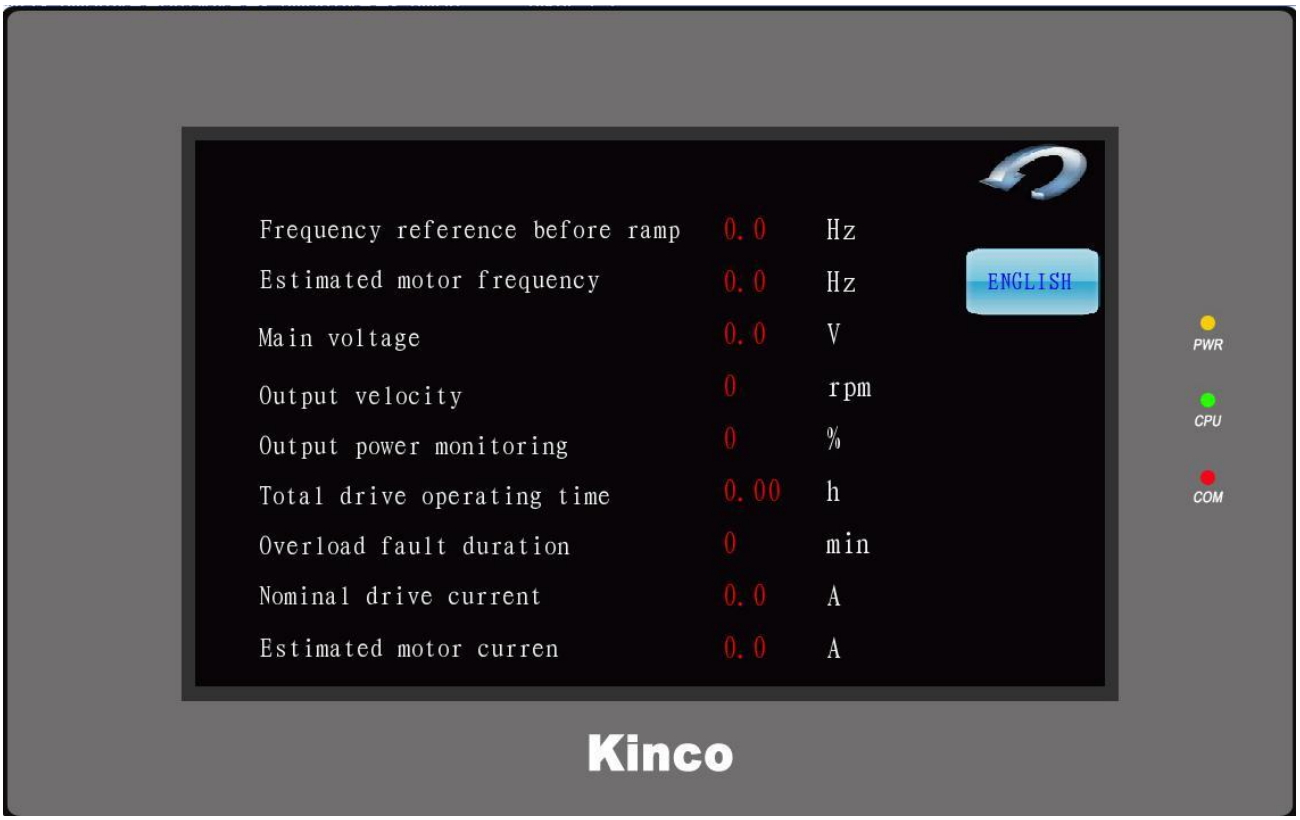
Input motor frequency, click “CONFIRMATION”, the fan will rotate in different speed according to setting frequency, input range 10HZ to 50HZ, click “FAN ON” or “FAN OFF” to control start and close

[C] fan of waste： on automatic mode, if main motor start or feeding start, fan of waste will turn on or off. on manual mode, fan of waste turn on or off depend on ON or OFF status.

8. Notebook



9. Monitoring



10. I/O check

11. Incident record

2. Motor turn-on：

Start main motor, working after motor speed stablilty.

Motor od decolier, on automatic mode, motor of waste turn on if main motor is on. Motor of oil pump on-off automatic depend on oil pressure status

3. For three colour light：

Green light：means system is in normal

Red light：means warning grade, stop or some error opearting

Yellow light：means some error operating and protection

Notice：while three light on, HMI will show related alarm reminder by character

4. High speed press operational approach and introductions：

Operation panel (drawing 3.1), (drawing 3.2)

1) checking rotate direction of main motor, ensure indicator for slide block rotate in clockwise

2) ensure setting all parameter of press, selector switch to continuous status, check if slide block stop proper location, if wrong location, should selector switch to inch status, adjust slide block to proper location from 270 degree to 12 degree.

3) main motor turn on, check speed chart of main motor, while speed steady can stamping.

4) press on two side pressing button at the same times (press on by both hands) to stamping

5) in stamping, according to setting parameter, stamping a certain amount of fins, it will go down certain space, for fins fall smoothly

6) when reaching to setting amount of stamping fins, finish pressing. Then, adjust manual valve, collection device change next station.

7) while adjust mould or change mould, selector switch to lift or drop top oil cylinder.

8) feeding in first time, push on feeding button to feed next station.

9) while turn off main motor, main motor will slow down speed, and automatic close in 15 second.

10) when push on feeding device, motor of decolier start, clutch of decolier will be start depent on if coil is ready. Drawing material of feeding device drawing to next station.

5. High-speed press safety and special regulatory measure：

1) once keep out photo-electric protection, machine will stop working immediately and alarm, for ensure photo-electric protection in good working condition, please keep clean on reflector of photo-electric protection.

2) for safety, loosen pressing button on single stroke, clutch will be off.

3) for main motor start safety, cannot working in 10 second after start main motor

5) single/double gap, forbid to lift or drop top

6) control program to automatic lock inside, not change oil cylinder of sliding block height on continuous working, control switch of sliding block is on dropping location.

7) system on preliminary stage

After start main motor in first time, system will be finish initialization warming up. Oil pump start first, oil cylinder dropping valve of sliding block switch on, supplement system pressure, lubricating grease pump turn on, lubricate to each part of machine.

8) unloading system

While motor of unloading device turn on, photo-electric sensor be keep out, then unloading device working

6. Introductions of electrical component：

1. strong electricity control

（1）main motor and inverter

（2）fan inverter of collection

（3）main power A.C. contactor

（4）main motor A.C. contactor

（5）fan of collection A.C. contactor

（6）A.C. contactor of control oil pump motor

（7）A.C. contactor of decoiler motor

（8）A.C. contactor of collecting waste motor (optional)

（9）general power 3PH switch

2. weak current control

（1）PLC、cam controller

（2）input power for oil valve and air valve

（3）FX2N-964MT PLC

（4）intermediate relay

（5）solid-state relay

（6）air circuit breaker

3. electrical failure predication and maintenance

1) main motor cannot start

（1）check if power switch turn on, including all air switch in electrical cabinet

（2）check if relay and A.C. contactor which connect to output module of PLC be damaged

（3）check if screw of amphenol connector of inverter be loose

（4）find fault code in operation manual according to fault code which inverter show, and solve fault

2) cannot pressing in continuos mode

First all, check fault indication on touch screen, correct wrong operate and maintain fault point according to fault indication

For explain, if touch screen alarm lower air pressure, should be check gar-pressure meter if air pressure value is more than 4bar, if its ok, then check air-pressure detection sensor of air storage tank fall, and check some connect wire be loose.

3) the most common fault is relay contact bonding, if non-bonding, no-output of PLC contact, should be check program, find fault, and solve it

electrical schematic diagram see drawing 3.3

3.2 Use & adjustment method for each mechanical part

3.2.1 operation of decolier device

1）introductions of decolier device

Decolier device is inner expand type for clamping Aluminum rolled coil, clockwise rotate hand wheel to expand inner of Aluminum rolled coil by three pieces block, conversely, reverse direction hand wheel to release AL rolled coil. It adopt roller clamping type feeding, back roll is steel roller which cover wear-resisting PU outer shell, front roll is steel roller by chrome-faced. If the photoelectricity inductive switch don't reaction coil, pneumatic electromagnetic valve reversing, loose brake block on coil shaft by pneumatic, pneumatic clutch connect reduction gears and feeding rubber roller, feeding AL sheet. If the photoelectricity inductive switch reaction coil, pneumatic electromagnetic valve reversing, close brake block on coil shaft by pneumatic, pneumatic clutch disconnect reduction gears and feeding rubber roller, stop feeding AL sheet. If the photoelectricity inductive switch don't reaction coil long times (time is 5.5s), photoelectricity inductive switch discrete sampling and stop machine, remind worker loading new AL coil.

2）installation of coil

[1] push on emergency stop button on decolier, turn off decolier on HMI

[2] reconfirm motor decoiler stop, decolier brake work for coil shaft

[3] pulling hand shank of cam up, rotate support of metal shaft, until to rotate to outside of coil

[4] anticlockwise hand wheel, until to hand wheel stop

[5] through center of coil by gantline, use pad for two end of coil for protection, slow sling coil by crane

[6] check if the coil in balance, if not balance, cannot through coil smoothly

[7] the crane make superposition for center of coil and metal shaft, push inner of coil into metal shaft, until to coil reaching to block, notice feeding direction of coil

[8] support of metal shaft return back, screw down hand crank of cam

[9] take out gantline

[10] clockwise rotate hand wheel, until to expand coil

[11] drawing head of sheet along rotation direction of coil, ensure enough length of sheet for through between feeding rubber roller and swagin shaft.

[12] overturn protective guard, loose screw, divide feeding rubber roller and swagin shaft for through sheet, check AL sheet if vertical to feeding rubber roller, reconcile center of AL material and center of coil, then tightening screw (notice: pretightening force of two side of screw must same)

[13] relieve emergency stop button on decolier, turn on decolier on HMI, feeding rubber roller of decolier rotate, until to material reaching to range of photo-electric sensor, keep out reflector.

Now is the end of installation work.(Notice: In machine of decelerate of continuous production adjustment handle, feeding speed and stamping speed match).

3.2.2 Soaked with oil unit operation

Coil axis through the press has a feed shaft transition, feed shaft has guide ring,make a function of feed positioning, when the coil get into the tank after a pressure cylinder ,coil voltage dip in fin oil, aluminum foil out of the tank mouth before pass by two pressure oil scraper shaft and the oil scraper shaft of oil scraper device, can put the coil on the redundant finned oil tank back, has felt pressure in tank and the initial feed material component, it can not only remove the aluminum foil on the rest of the finned oil and other impurities, also have pressure coil, to prevent it from coil when the jitter in high speed, felt should be replaced periodically, in order to keep clean and smooth.

3.2.3 Initial feed unit operation

The initial feed unit is to put the coil head into the mold of equipment，which is only for debugging.When the mold of institution work, the device ACTS is as a guidance.

When feeding, the two pressure cylinder pressure in front of the coil loosen the two positioning cylinder，moving cylinder with the pressure cylinder is moving in the direction of mold.After posiitoning precisely, two back positioning cylinder pressure aluminum foil,and then pressure cylinder loosen,moving cylinder with pressure cylinder moves to

mold in the oppsed direction,then it is a completed work cycle, aluminum foil opening step by step into the mould （Notice：a step is a cycle,moving travel will be designed,which is based on customer's requirement.

3.2.4 Operation of quick change of dies

1) Installation of dies

[1] Put stamping host die height adjustment to be higher than installing the mould clamping height 1 ~ 2 mm， in the condition of "inching",after stopping the slider on the under dead point,lift the slider to the highest location;

[2] Press "emergency"button,take the power supply,air supply off,open deflated ball valve of the air tank,release the rest compressed air;

[3] Put the cloggy pipes and wires outside the oil leaching stand;

[4] Put screws off,rotate oil leaching stand for 90°towards left and right;

[5] Use crane to lift installed dies on the changing die car, and plug in locating pin;

[6] Put the car slowly into the work of the mould bedplate guide groove of the mould that have been working to counter the positioning of the location;

[7] Return the oil leaching stand to the original location,install the screws,pipes and wires,open the producing power supply and air supply,relieve the "emergency"button,adjust the distance between the under surface of the slider and upper die to about 2~3mm,tighten upper die installing screws(Notice:Do not tighten so much);

[8] Put the locating pin off,lift the slider to make the die leave the changing die car,and stop lifting the slider,after pushing the car to the original location,put the slider down untill the lower die bedplate is nicely with the work table;

[9] Plug the locating pin,install the under die's fastening screws,and put the connecting plate off;

[10] Lift the slider to take the pad between die limit columns out,and stop lifting the slider(take the whole pads out), drop the slider until it is near the adjustment screw.(Notice:confirm that stamping host die height is more 1~2mm than the die clamping height),tighten the upper die fastening screws;

[11] Install the pulling material unit,rocker and die puller arm, install the trachea, lubricating oil pipe matching press host and dies.

Now,the installation of dies is over,we can do debugging work.

2) Operation of die uninstallation

[1] Put the connecting plate between rocker and die puller arm off,and put the trachea, lubricating oil pipe matching press host and dies.

[2] In the condition of “inching”,stop the slider to the under dead location,lift the slider and put the pads into the locating columns(Notice:the whole pads together)，and then just put gently down the slider to the first die limit column pressure on the block;

[3] Put the connecting plate of upper and under dies on,put the positioning pin and the lower die fastening screws off,after lifting the slider to the top, push the car of the die to work within the bedplate locating position, drop the slider to the next plane gently pressure lower die in a car on a flat surface of the die, press the positioning pin;

[4] Put the fastening screws of the upper die off,and lift the slider;

[5] Press the “emergency”button,and take off the producing power supply and air supply,open the gas ball valves of air storage tank,release the reat compressed air;

[6] Put the cloggy pipes and wires outside the oil leaching stand off;

[7] Put the screws off,rotate it for 90°towards left and right, the car slowly changing of the die will promote the work table that has been pushing the car frame the positioning of the location of the die;

[8] Put the locating pin off,and lift the die by crane.

Now,the uninstallation of die is over.

Warning

✧ Forbid processing in the way of “inching”mode, lack of torque (incomplete) clutch will damage the clutch or adhesion.

3.2.5 Instruction and adjustment of pulling unit

1) Instruction

Pulling unit is a unit of realizing step-pulling by rule, pull material form is pull type, through man-machine interface to set parameters, control the action of the hydraulic system, realize single step and conversion of the double hole step by step. It is mainly composed of eccentric disc, main oil cylinder, single and double jump and other components of the oil cylinder and puller arm, by adjusting the quantity of eccentric disc to adjust the feeding interval. In slider, lift cylinder action, realize the single step, pull arm through the swinging rod and mould material process.

2) Adjustment

[1] In the condition of “inching”, make stop at 90 ° crankshaft position, adjust the eccentric disc, make down of eccentric disc and with the main oil cylinder into a straight line, adjust the two pull arm, make die puller lever stops at the end of the puller;

[2] The crankshaft point move to 270 °, measure the puller's schedule, such as too big, please put down of eccentric disc, such as too small, please turn to the eccentricity of the eccentric disc, until the puller schedule more than the fin puller 3 ~ 4 mm, the length of the crankshaft when they stop at 90 ° position eccentric eccentric disc down and tie into a straight line;

[3] Crankshaft stop at 90 ° position, adjust the connection rod, make mould puller, stop in the middle of the puller stroke position, repeatedly in human-machine interface according to the single and double jump [a] and [closed], the single and double jump cylinder moves back and forth, at the same time adjust the stud, moves back and forth until when single and double jump cylinder mould puller lever almost no deviation;

[4] Tighten the adjustment screw on both ends of the lock nut and adjust the connection rod, make mould puller rod position at the end of the puller.

Now, the adjustment of pulling unit is over.

3.2.6 Instruction and adjustment of absorbing unit

1) Instruction

Suction feeder is vacuum adsorption, using the cylinder driving throttle switch control adsorption and blanking, throttle opening and closing controlled by electromagnetic valve by PLC, the open and close Angle can be adjusted in man-machine interface. The device has the function of slab discharge, make the aggregate is more stable, and the whole device can up and down, left and right sides, before and after the adjustment, to adapt to the height of the different length of the mould, due to the different type requirement of adsorption is different, so the suction fan motor is controlled by frequency converter, to change the size of the adsorption force and meet the requirements of different, convenient for the user’s quick and easy adjustment.

2) Adjustment

[1] Loosen the two locking screws and the four top screw, push the suction plate until the suction plate front from die cross-cutting knife blade 5 ~ 10 mm;

[2] Using a wrench, fixed screw end turn adjusting nut, clockwise suction feeder, conversely, under the adjusting plate to absorb the plane 1 ~ 2 mm higher than the die feed line (Notice: to both sides of the adjusting nut at the same time

adjust);

[3] Adjust the four top screw until on the slot suction plate fin, to ensure that the suction plate can reliable adsorption fin, to tighten the two locking screws.

Now,the adjustment of absorbing unit is over.

3.2.7 introductions and adjustment method of collection device

Collection devise is used for superimposed collect stamping fins orderly

Operation and adjustment for transiation collection device

[1] stamping fins be absorb on absorbing plate

[2] stop collection frame to one side, move collection device for needle of two groups in middle of collection aim at hole of fins, fix collection by expansion screw

[3] full fins in one collectoion, adjust manual valve to change the other collection to location under of abosbing plate

3.3 Pneumatic & hydraulic part

3.3.1 Pneumatic part

Pneumatic schematic diagram see drawing 3.4

3.3.2 Hydraulic part

Hydraulic schematic diagram see drawing 3.5

3.4 Electrical schematic diagram

See drawing at PageEnd of operation manual

Fourth: Upkeep

4.1 Regular checking

4.1.1 Everyday's checking items

Check the following items everyday, if there are problems after checking, it needs to be soluted immediately.

Nos.	Checking items	Way	Standard judgement	Solution
1	Check the oil pipe joint Check the pneumatic pipe connectors	Visual	Damaged/leaked or not	Change
2	Checking main motor	Listening	Abnormal noise or not	Amend or change
3	Checking the pressure of air press system	Visual	Set 0.55～0.7MPa	Adjust
4	Checking the pressure of hydraulic system	Visual	Set 8MPa	Adjust
5	Checking the photoelectric safety protection device	Visual	Abnormal or not	Amend or change
6	Oil quantity of host lubrication pump Oil quantity of die lubrication pump	Visual	Confirm quantity	Add
7	Checking the electric button switch indicator light	Visual	Damaged or not	Change
8	Checking the cleanness of production line	Visual	Dirty or not	Clean

4.1.2 Every month's checking items

Check the following items and items in 4.1.1 every month,if there are problems,it need to be soluted immediately.

Nos.	Checking items	Way	Standard judgement	Solution
1	Checking main motor	Touch	Abnormal fever or not	Find reason and amend
2	Checking V-blet	Visual and touch	Watch tension	Change or adjust
3	Checking fastening screws on the slider gland	Visual	Loose or not	Tighten
4	Checking each bearing of feeding institution	Visual	Damaged/add oil or not	Change or add oil
5	Checking each bolt and nut of feeding institution	Visual	Loose or not	Tighten
6	Checking each screw of safety shield	Visual	Loose or not	Tighten
7	Checking hydraulic station and oil pump	Touch	Less than 60℃	Find reason to amend
8	Checking hydraulic station cooling fan	Visual	Move reliable or not	Find reason to amend
9	Checking hydraulic station working oil quantity	Visual	Confirm content gauge	Add
10	Checking the main clutch brake	Put the shield cover down to watch and listen	Leaked/noisy or not	Find reason to amend
11	Checking mainshaft bearing	Touch	Abnormal fever or not	Find reason to amend
12	Checking air press and hydraulic press gauge	Visual	Damaged or not	Change
13	Checking lifting cylinder	Visual	Leaked or not	Change sealing elements
14	Checking feeding arm lifting cylinder	Visual	Leaked or not	Change sealing elements
15	Checking single/double leaping cylinder	Visual	Leaked or not	Change sealing elements
16	Chekcing balancing jar	Visual	Damaged or not	Change
17	Checking based bolts	Touch	Loose or not	Tighten

4.1.3 Every year's checking items

Check the following items and items in 4.1.1 and 4.1.2 every year,if there are problems,it needs to be soluted immediately.

Nos.	Checking items	Way	Standard judgement	Solution
1	Checking clutch travel	measure	1.5～11mm	Change friction plate
2	Checking the hydraulic rubber hose	Visual	Rubber aging/damage or not	Change
3	Checking the aggregate needle	Visual	Aggregate needle bend or not	Change
4	Checking precision of press	Measure	Standard or not	Adjust
5	Checking the hydraulic, pneumatic solenoid valve, hydraulic pump	Visual	Confirm movement condition	Change

4.2 Lubrication interval and oil quantity

Occasion	Oil mark	Interval	Oil quantity
Feeding frame bearing	No.0#grease	1 month	5g
Feeding motor	VG320gear oil	The first time 100 hours The second time 500 hours Later 1000 hours	Change
Flywheel bearing	No.0#grease	6 monthes	20g
Guideway	0#or00# extreme pressure lithium-based grease	Add at the right time	1.5L
	68#lubrication oil	Add at the right time	1L
Die guideway lubrication	68#lubrication oil	Add at the right time	1.5L
Hydraulic station	ISOVG32（winter） ISOVG48（summer）	1 year	Change
Partial bearings of feeding unit	No.0#grease	1 month	0.5g

Atomized lubricator	$0^{\#}$ Turbine oil, no additive VG32	Add at the right time	1L
Oil passing tank	Volatile oil fin	Add at the right time	50～60L
Mold waste oil tank	Volatile oil fin	Add at the right time	40L

NOTICE

✧ **Forbid using unstandard lubricating grease,or it'll make some damage in the part of slide.**

✧ **Must use standard oil,forbid using different sort of oil and new-old mixing oil,or it'll make oil lose the function of lubrication,which leads to some damage in the part of slide.**

✧ **To guarantee that use lubrication grease,hydraulic transmisssion and lubrication oil safely,we should accept oil production factory product safety data sheet that grease sellers supply.Basing on the requirements of this data,take appropriate measures,especially emergency measures, measures of fire, the oil of measures and matters needing attention, such as custody, scrap.**

✧ **We should clean it after oil flowing out.If oil get in the control equipment,it's easy to lead to wrong action because of control equipment 's insulation fault.**

4.3 V-belt change

1）Push emergency button,take off power supply,air supply of producing line.Open the air tank is deflated ball valve,release rest air inside,confirm that main motor has stopped working;

2）Put the double valve, pipe, and flywheel cover plate of flywheel off;

3）Turn the support of main motor down(adjust 4 nuts at the same time),put theV-belt off;

4）Put one of the brake plates connecting clutch brake and bed off,take V-belt out,put new one in.Put another brake plate off after installing this one,take V-belt out,put new one in,and then install the brake plate;

5）Install V-belt,adjust support of main motor(adjust 4 nuts at the same time),tighten V-belt;

6）Install shield cover plate, double valve and piping.Now,the work is finished.

Danger
✧ **Confirm that the main motor has stopped working before putting the flywheel shield off,or it will result in wound or death.**

4.4 Common fault and solutions of producing line

Fault	Reason	Solution
Feeding support doesn't feed	1. Photoelectric sensor in a wrong location	Install again
	2.No air supply	Connect air supply
	3.Feeding motor broken	Connect air supply
	4. Solenoid valve broken	Change
	5. Steel shaft without hold-down roll material	Adjust again
	6.Slipping of feeding clutch	Change feeding clutch friction plate
Feeding support can't stop	1.Solenoid valve broken	Change
Photoelectric protection device is ineffective	1. Polarized light curtain in a wrong location	Adjust
	2.Loose of support	Install fastening screws
Main motor can't activate	1. Alternating current contactor broken	Change
	2.PLC can't output	Connect power supply
	3.Short circuit or lack of phase of main motor	Connect power supply
	4.Interver	Confirm the parameter of interver
	5.Interver overload	Check the reason of overload and handle it
Main motor of press doesn't work	1.Pressure is too low	Increase pressure upto 9Mpa or higher
	2.Bad connection of double-hand operation button	Change double-hand operation button
	3.two hands don't push at the same time	Push the button at the same time again
	4."Emergency"doesn't reset	Reset "Emergency"
	5.Photoelectric safety device into the foreign body	Take the foreign body off
	6.The slider did not reach the top dead center position（【once】、【continue】condition don't work）	at【inching】condition,make the slider move to the top dead center position

	7.Double valve broken	Change
	8.Double valve coil broken	Change
	9.Main clutch brake friction plate out of the range of abration	Change the friction plate
	10.The plunger of main clutch brake leaks air	Change the sealing of the plunger
Cross-cutting knife, single and double jump, throttle back don't work	1.Rotary encoder broken	Change
	2.Loose of connecting shaft of rotary encoder	Tighten fastening screw
Cross-cutting knife, single and double jump, throttle back action position is not right	1.The original angle of rotary encoder is not right	Reset the original angle
	2.Loose of connecting shaft of rotary encoder	Reset original angle after tightening fastening screw
Absorbing material unit is unstable	1. Chuck fan vibrates horribly	Tighten fastening screw
	2.Absorbing pressure is too low	Reset absorbing motor interver
	3. Suction plate slot hole and wing in a wrong location	Adjust again
	4. Mold a piece of uneven, fin bow, skewed	Adjust again
Collecting material unit is unstable	1.Absorbing material unit is unstable	Adjust again
	2.Collecting material unit and wing hole in a wrong location	Adjust again
	3. Suction bellows damper and stripper plate opening and end position in a wrong location	Adjust again
Coil stock in a wrong location	1.Fuel tank and the initial feed in a wrong guide location	Adjust again
	2.One side of pulling material unit in a wrong location	Adjust again
	3.Pulling material unit shaft and die out of vertical	Adjust again
	1.Decelerate valve adjusted wrong	Adjust again
	2.Decelerate testing switch doesn't work	Adjust again or broken

Fifth: Installation

5.1 Package

1）Release the working liquid and air out of box totally before packing(except special occasion);

2）Before packing,smear and seal the processing surface of machine parts,units and accessories,the antirust requirements should conform to the relevant provisions;

3）Machine package and packing boxes should conform to the relevant provisions.

5.2 Storage

1）Confirm enough stability;

2）Prevent rain,moist,mouse,and good ventillation;

3）When store it in a long time,check the storage condition and packing condition regularly.

5.3 Transmission

1）Confirm safety and reliability,shouldn’t appear abnormal movement ,incline and rotary movement;

2）Concerning the machine parts and units whose weight are over 16kg,set hoist holes,lifting holes and lifting tools;

3）When the machine parts and components for dangerous materials and shapes, special handling measures should be taken.

5.4 Lifting

5.4.1 Notice

1）Choose right lifting tools;

2）Crane must be operated by qualified person;

3）Please in strict accordance with the crane operation instruction;

4）Please wear safe units;

5）Be careful and stable during lifting;

6）Be away from dangerous area during lifting;

7）When hoisting ,wire rope should be less than 90 ° angle, in order to avoid danger.

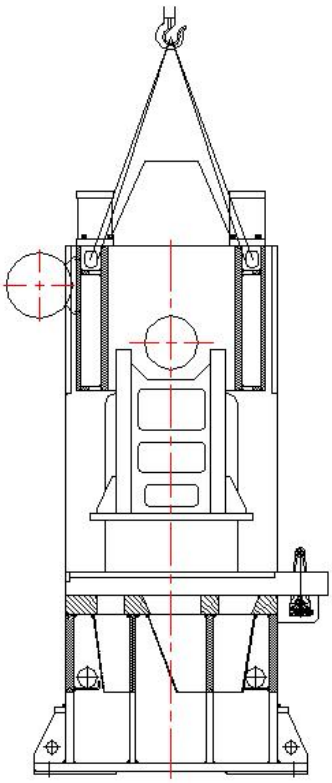
5.4.2 Manner

1) Get smooth round bar through the left and right side of the bed.

2) Use wirerope 20mm,get through the bottom hole of fixed bed andsmooth round bar in a way of “+”cross.

3) Put the crane hook in an appropriate location,get off the ground slowly and adjust load smoothly to maintain the balance condition.

4) Confirm safety and lift to carry.



5.5 Installation

Notice
✧ In construction of foundation engineering，make sure to consider foundation capability，pressure 15 tons/m2，or press local subsidence will happen. ✧ Use standard oil,forbid using different sort of oil and new-old mixed oil,or it can make oil lose the function of lubrication and some damage in the part of slide.

1）Under the equipment foundation bearing capacity of foundation should be more than 15 tons/m2, if not enough, please use piling or other methods to strengthen.

2）Under the foundation,need to pave big stone that has 400mm thickness,and pave about 60mm thick gravel cushion, 40mm thick C20 fine stone concrete leveling.

3）Finishing the foundation,after half of a month,use cement mortar to pour foundation bolt, pouring into and no shrinkage concrete pouring bottom surface.We need to use wooden dies to make sure the relative location of 4 foundation bolts,and plumb degrees of foundation bolts permits 1:100, the upper without shrinkage of cement temporarily is not pouring.

4）Bed'll be set after half of a month,put 4 steel plates(100X100X30)away. Use 4 bed level adjustment bolts(M30×150)to hold the steel plates,and make the bed level,then use level gauge to check table,the precision of cross and longidutinal travel should be less than 0.10mm/100mm，and then pour no-shrinkage of cement.In case that 4 adjustment bolts solidificate with cement,we should set protector to divide cement. After drying(about a week),put in rubber shock absorption first,release adjustment bolts,tighten foundation bolts and nuts smoothly.

5）Foundation bolts and nuts are tighten and then inspect the bed level.If it can't be standard,then it need to be adjusted again.

6）Release foundation bolts and nuts,push 4 adjustment bolts to lift the bed,and adjust the bed level by adding pad between rubber shock absorption mat and ground.

7）On basis of electrical cabinet location,set power embedded position.

8）Damping ditch use pitch or other things to damping.

Notice：If customer need shock pad iron,you can contact with our sale department.